第２講　英語長文演習②

次の英文を読んで，下記の設問に答えよ。

Children who are physically fit absorb and hold onto new information more effectively than children who are out of shape, a new study finds. Parents and exercise scientists have known for a long time that physical activity helps young people to settle and pay attention in school or at home, with benefits for academic performance. A (1)representative study, presented in May at the American College of Sports Medicine, found that fourth- and fifth-grade students who ran around and otherwise exercised vigorously for at least 10 minutes before a mathematics test scored higher than children who had sat quietly before the exam.

Until recently, however, no study had specifically examined whether and in what ways physical fitness might affect how children learn. Last year, researchers at the University of Illinois filled that gap by recruiting a group of local 9- and 10-year-old boys and girls, having them exercise on a running machine, and then asking 24 of the most fit and 24 of the least fit to come back and work on some difficult memory tasks. Learning is, of course, a complex process, involving not only taking in and storing new information in the form of memories, but also recalling that information later. Information that cannot be recalled has not really been learned. Earlier studies of children’s learning styles have shown that most learn more successfully if they are tested on material while they are in the process of learning it. In effect, if they are tested while memorizing, they remember more easily. By contrast, straight memorization, without such testing during the process, is

much more difficult.

NOTE

In this case, the researchers chose to compare both approaches to learning, by providing their young volunteers with iPads that displayed several maps of imaginary lands. The maps were divided into regions, each with a four-letter name, which the researchers had the children memorize. There were two learning sessions, A and B, and half of the children participated in each of the sessions. In the A session, children were shown these region names in place for six seconds. The names then appeared on the map in their correct position six additional times while children stared at and tried to memorize them.

In the B session, region names appeared on different maps in their proper location, then moved to the margins of the map. (　2　) simply staring at the map, children were asked to tap on a name and match it with the correct region. This task tested the children as they memorized. A day later, all of the children returned and were asked to correctly label the various regions of the maps. The results show that, (3)<u>overall</u>, the children in the B session performed similarly when they were asked to recall names for the map regardless of their fitness. But for the children in the A session, those who were in better physical condition performed significantly better than those in the less fit group, remembering about 40 percent of the regions’ names accurately, compared with merely 25 percent accuracy for the out-of-shape kids.

NOTE

This finding suggests that "higher levels of fitness have their greatest impact in the most (4)challenging situations that children face intellectually," the study's authors write. (5)The more difficult something is to learn, the more physical fitness may aid children in learning it. If children are to develop and maintain the kind of physical fitness that increases their ability to learn, said co-author Charles Hillman, an Education professor at the University of Illinois, they should engage in "at least an hour a day" of vigorous physical activity. Schools, where children spend so many of their waking hours, provide the most suitable place for them to get such exercise, he said.

[How Physical Fitness May Promote School Success by Gretchen Reynolds, The New York Times, September 23, 2013 © 2023 The New York Times]

NOTE

1. 下線部（1），（3），（4）の意味として最も適切なものを選択肢から選べ。

（1）representative

A. familiar　B. fresh　C. common　D. typical

（3）overall

A. on average　B. fortunately　C. in part　D. currently

（4）challenging

A. embarrassing　B. exciting　C. suitable　D. demanding

2. 空所（　2　）に入る最も適切なものを選択肢から選べ。

A. Instead of　B. In spite of　C. As well as　D. Without

3. 第 1 パラグラフの内容と一致するものを選択肢から一つ選べ。

A. A recent study indicates that children’s fitness depends on their ability to learn new information.

B. That there is a relationship between academic performance and physical activity has long been recognized by parents and researchers.

C. A study showed that children who ran around before a mathematics test achieved higher than those who exercised hard.

D. Fourth- and fifth-grade students of the American College of Sports Medicine were given a mathematics test in order to show them the close relationship between physical activity and academic learning.

4. 第 2 パラグラフの内容と一致するものを選択肢から二つ選べ。

A. There has been a lot of research on the effects of exercise on body shape and children’s learning.

B. The researchers at the University of Illinois did an experiment to find out more about how fitness affects students’ ability to recall stored information.

C. The researchers divided the children into two exercise groups, based on their performance on memory tasks.

D. Understanding the complexity of learning is necessary for the storage and memorization of new information.

E. Learning consists of several processes, including the taking in new information and its subsequent recall.

F. Straight memorization involves repeatedly testing students as they are learning.

5. 第 3 パラグラフの内容と一致するものを選択肢から一つ選べ。

A. The researchers asked children to use iPads to give names to imaginary countries.

B. The children divided the maps into different areas and named each area using one of four letters.

C. The children were asked to memorize the names of the regions and their locations on the invented maps.

D. The children in the A session were shown the names of the specific regions more than ten times.

E. The region names that were displayed on the iPads did not disappear before the children learn them by heart.

6. 第４，５パラグラフの内容と一致するものを選択肢から二つ選べ。

A. The children in the B session were asked to tap on the region names and move them to the edges of the map.

B. On the day following the two learning sessions, the researchers tested the children’s ability to recall the region names.

C. For the participants who had attended the B session, their level of fitness affected their ability to recall the region names.

D. The results of the study show that fitness has a significant influence on memorization on certain learning situations.

E. Professor Charles Hillman recommends that children should develop a high level of physical fitness so that they can engage in vigorous physical activity.

F. Schools find exercise a very suitable way to keep children awake.

7. 下線部（5）を日本語に訳しなさい。

第２講　解答

＜解答＞

1.（1）D　（3）A　（4）D

2. A　3. B　4. B, E

5. C　6. B, D　7. 全訳の下線部を参照。

＜全訳＞

肉体が健康な子供は，体調不良の子供よりも，効果的に新しい情報を吸収して定着させていくと，新しい研究が示している。親と運動科学者は，肉体の活動のおかげで，若者が，学校や家で落ち着いて注意力を持ち，学業でよい成績を上げるとかなり前からわかっていた。アメリカスポーツ医学会で 5 月に提出された典型的な研究によると，数学のテストの前に，少なくとも 10 分間走り回ったり，精力的に他の運動をしたりした４年生と５年生が, 試験前に静かに座っていた子供よりも得点が高かったとわかった。

しかし，最近まで肉体が健康であることが，子供の学習方法に影響を与えるかどうか，どんな点で影響するかを明確に調べた研究はなかった。昨年，イリノイ大学の研究者は, 地域の 9 歳と 10 歳の少年少女を集め, ランニングマシーンで運動させてから, 最も元気な 24 人と最も元気ではない 24 人に，再び集まって難しい記憶課題に取り組むように頼むことで，その空白を埋めた。もちろん学習は，複雑な過程であり，記憶という形態で新しい情報を取り入れることと蓄えることだけでなく，その情報を後で思い出すことも含まれる。思い出せない情報は，実際には学習されていない。子供の学習スタイルの以前の研究で，題材を学習しているときに，その題材に関してテストすると，たいていの人はよりうまく学習できるとわかっている。実際に，記憶しているときにテストすると，より簡単に覚えられるのだ。これに対して，学習過程でそういったテストをしない丸暗記は，ずっと難しくなる。

この事例では，研究者たちは若いボランティア被験者たちに想像上の土地のいくつかの地図を表示する iPad を与えることで，学習への両方の取り組み方を比べることにした。その地図は地域ごとに分けられ，各地域には 4 文字の名前が付いており，研究者たちは子供たちにその名前を記憶させた。二つの学習パート A と B が存在して，子供たちは半数ずつそれぞれのパートに参加した。A のパートでは，子供は 6 秒間決まった位置にあるこれらの地域名を見せられた。次に子供がじっと見て記憶しようと

している間に，さらに 6 回，その名前が正しい場所で地図上に現れた。

Bのパートでは，地域名が適切な場所で，異なる地図上に現れて，それから地図の余白に移動した。単に地図をじっと見つめるのではなくて，子供たちは名前をタップして，それを正しい地域と組み合わせるように要求された。この作業は，記憶している間に，子供たちをテストするものだった。一日経って，子供の全てが再び集まり，地図上の様々な地域に正しく名前を付けるように要求された。この結果によると，概してBパートの子供は，地図に応じた名前を思い出すように要求された時に，健康状態に関係なく同じような成績を収めた。しかし，Aパートの子供の場合，体調がよりよい状態にある子供たちは，より健康ではないグループの子供たちよりも，著しく優れた成績を収めた。すなわち，元気ではない子供が，ほんの 25% の精度しかなかったのに比べ，その地域の名称のおよそ 40% を正確に思い出したのである。

この発見から，「より健康的であることが，子供が知的側面で直面する最も難しい状況で，最も大きな影響を与える」ことがわかると，その研究の著者は記している。学習するものが難しければ難しいほど，体が健康的であることが，それを学習する際に子供を助ける度合が大きいのかもしれない。もし子供が，学習能力を高めるような類の体の健康を発達させて維持しようとするなら，「少なくとも一日に一時間」精力的に運動に励むべきだと，イリノイ大学の教育学の教授である共著者のチャールズ・ヒルマンは言った。学校は，子供たちが起きている時間のとても多くを費やす場所なので，子供たちがそういった運動をする最も適切な場所を提供するのだと彼は言った。

第２講 重要語彙リスト ＊一つ一つ何度も繰り返して，覚えてください

1	fit	健康な
2	absorb	吸収する
3	hold onto	維持する
4	effectively	効果的に
5	settle	落ち着く
6	benefit	利益
7	academic performance	学業
8	representative	代表する，典型的な
9	otherwise	さもなければ，別のやり方で
10	vigorously	精力的に
11	specifically	明確に
12	examine	調べる
13	recruit	募集する
14	complex	複雑な
15	involve	含む
16	store	蓄える
17	recall	思い出す
18	material	題材
19	straight	真っ直ぐの
20	memorization	暗記
21	approach	取り組み方
22	divide A into B	A を B に分ける
23	region	地域
24	participate in	～に参加する
25	in place	定位置にある
26	correct	正しい
27	stare at	じっと見つめる
28	location	場所
29	margin	余白
30	tap on	たたく
31	match A with B	A を B と組み合わせる
32	label	ラベルを貼る
33	overall	全般的に
34	similarly	同様に
35	regardless of	～に関係なく
36	significantly	著しく
37	accurately	正確に
38	challenging	困難な
39	maintain	維持する
40	engage in	～に従事する

第２講　音読用白文　① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

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